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CHILTON'S

FOOD ENGINEERING

SINCE 1928. THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT

HACCP

PRE-EMPTIVE QUALITY CONTROL

FOOD ENGINEERING

COVER STORY

HACCP (Hazard Analysis/ Critical Control Points) or preemptive quality control—a system that checks the process for contamination—is undergoing a renaissance.

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News

13 Industry Report
This month's Report talks about the NAS report on consumers' cut in consumption of fats in meat and milk, but increase of fat in processed food; the food industry's high GNP ranking among all U.S. industries; the food claims credo according to IFT's President-elect Hopper; and options by which the FDA may resolve regulatory issues concerning carcinogens.

35 Marketplace
This month's report focuses on convenience for food service, the theme of this year's National Restaurant Association Show; and the popularity of fruit soups and vegetable drinks as Japanese "health" foods.

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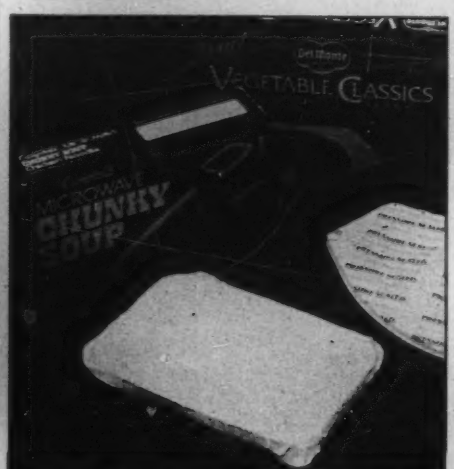

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FOOD ENGINEERING® (ISSN 0193-323X) August 1988, Vol. 60, No. 8. Published monthly by Chilton Company, Chilton Way, Radnor, Pa. 19089 (Telephone 215/964-4000). Chilton Co., part of Capital Cities/ABC Inc., New York, N.Y. Second Class Postage Paid at Wayne, Pa. 19087 and additional mailing offices. Title registered in U.S. Patent Office ™Chilton Company, 1988. All rights reserved.

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CHILTON FOOD GROUP

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HACCP first came to light in the sixties, in support of the U.S. effort to send men into space. But it remains as contemporary as the latest food safety concern, and is a procedure every processor should be familiar with.

83 IFT Post-show Report
The demand for good tasting, convenience foods remains strong. And attendees at this year's Institute of Food Technologist's Food Expo found numerous ideas for developing products to meet this demand.

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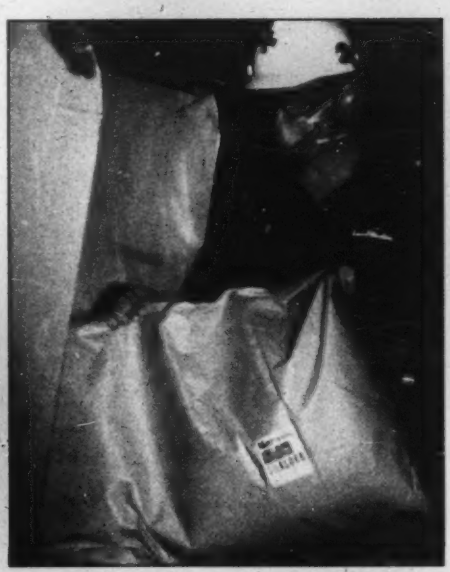

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Special Emphasis

FLAVOR RESEARCH

The line between seasonings and flavors is becoming blurred as traditional flavor companies introduce seasoning replacements and spice companies offer spice blends with increased flavor.

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Food industry ranks high in GNP, jobs, and value of shipments

Depending on how you measure it, the U.S. food industry ranks first, second or third among U.S. industries, reported Dr. John M. Connor, agricultural economist from Purdue University, at the annual meeting of the Institute of Food Technologists June 20 in New Orleans. Connor presented data from his report, *Food Processing: An Industrial Powerhouse In Transition*, commissioned by the IFT Research Committee and published in July.

In terms of value added as a contribution to Gross National Product (GNP), the food-processing industry ranked No. 3 among the top 20 U.S. manufacturing groups in 1985, Connor reported. By this measure, food processing added value of $104 billion, or 10.4 percent of the value added by the entire manufacturing sector.

When food processing is examined as a vertical system stretching from farm to supermarket, however, the food system comprises the nation's largest single economic activity, contributing $339.2 billion worth of value added (excluding tobacco) to the GNP in 1982. Connor broke out the value added by each stage in the food system:

- Agriculture: $69.5 billion (20.5 percent);
- Processing: $80.4 billion (23.7 percent);
- Wholesale/retail: $125.5 billion (37 percent);
- Food service: $41.7 billion (12.3 percent);
- Transportation: $22.4 billion (6.6 percent).

More broadly defined to include suppliers of equipment, ingredients, materials and services, the food system contributed about $487 billion to the GNP in 1982, said Connor—"almost 16 percent of total U.S. economic activity and 2½ times the GNP devoted to defense."

Job creator

By employment measurements, food processing:

- Ranks third in direct employment (1.7 million) after electrical and nonelectrical machinery.
- Ranks second in value of shipments per employee ($200,000).
- Has an employment multiplier (i.e., additional jobs created per industry job) of 3.74—far above the U.S. industry average of 2.18. "The greater an industry's economic linkages, the greater the multiplier," Connor pointed out.
- Accounts for 4.8 million jobs when indirect employment (agriculture, equipment, transportation, etc.) is included.
- Accounts for 14 million jobs—"more than there were in 1950 despite the decline in agriculture"—when wholesaling, retailing and food service are included.
- Accounts for 18 million jobs, or 17 percent of the civilian work force, when related sectors such as fertilizers and feed are factored in.

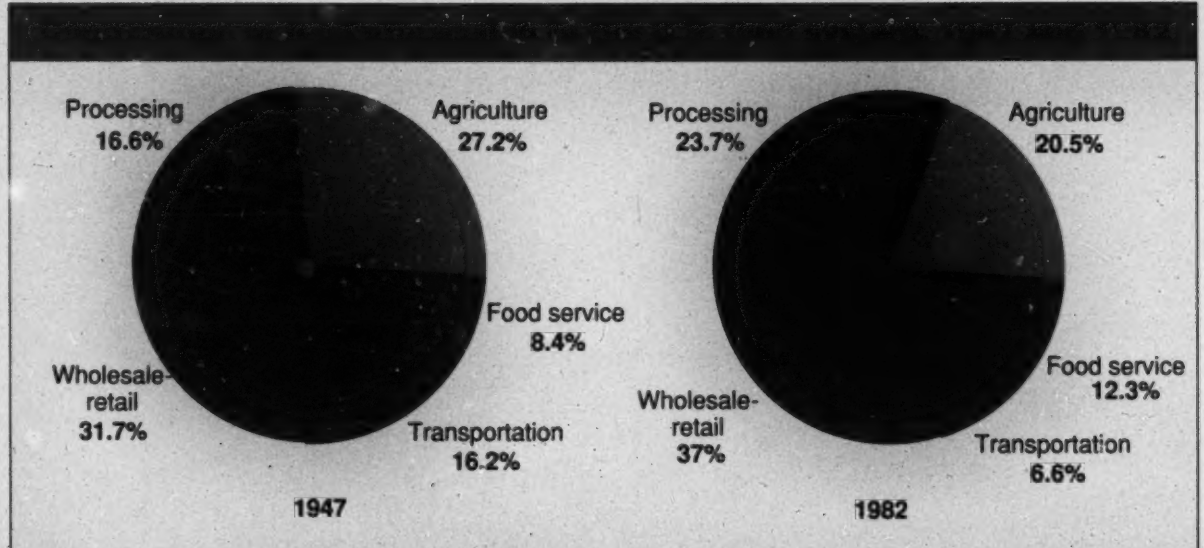
These figures do not include an estimated 150,000 scientists, engineers and regulatory people employed in R&D by industry, universities and government.

Fewer firms, fewer plants

Based on the value of shipments, food processing is the largest manufacturing industry in the U.S. Shipments in 1985 totaled $302 billion, or 13 percent of all manufacturing-industry shipments and $85 billion higher than the next largest industry group (nonelectrical machinery).

The number of U.S. food plants fell from 37,000 in 1963 to 22,000 in 1982 and nearly half of these had 20 employees or less, Connor continued.

(Continued on page 23)



Sources: John M. Conner; IFT Research Committee

While the number of food processing plants has declined, food processing today is the largest manufacturing industry in the United States. Shipments in 1985 totaled $302 billion, or 13 percent of all manufacturing-industry shipments throughout the nation.

←Circle 12 or see FEM, p. 181

GNP

(Continued from page 13)

About 100 new plants are built each year as nearly 1,000 shut down. Plants with 100 or more employees account for 73 percent of food-shipment value and 72 percent of total employment. "It is likely that by the year 2000, only 13,000 to 14,000 food-processing plants will remain in operation, with the average size much larger," Connor predicted. (Editor's note: *Food Engineering's 1987-88 Directory of U.S. Food & Beverage Plants* lists 13,500 plants employing 20 or more people.)

Industry consolidation is a significant change, Connor continued. The number of food-processing firms has declined by about 4 percent per year since 1963 to a historic low of less than 14,000 in the late '80s. In 1963, the 50 largest food processors owned 42 percent of all food-processing assets; by 1987 that figure "had climbed to an enormous 75 percent share and will reach 90 percent by the year 2000," said Connor. Although high profitability seems to be a major motive for food-industry mergers and acquisitions, "recent research shows that most mergers turn out to be relatively poor investments because of the high acquisition prices paid and subsequent mismanagement by the acquiring firms," said Connor (*FE* June, '87).

Foreign investment in the U.S. food-processing industry surpassed that of U.S. investment in the food industry abroad in 1984 and "foreign-owned companies now control about 10 percent of sales in the U.S. market," Connor continued. On the other hand, sales by foreign affiliates of U.S. food processors equaled 37 percent of domestic sales and 27 percent of all world sales. Overall, 31 percent of U.S. food processor sales occurred abroad in the early '80s, up from 29 percent in 1977.

Food processors spent $834 million on R&D in 1984, Connor reported, up from $259 million in 1972 and $130 million in 1963 for a growth rate averaging 9.3 percent per year as compared to 8.6 percent for all U.S. industry. Yet food processing R&D expenditures represent only 0.4 percent of sales—the lowest ratio of any manufacturing-industry group—and are concentrated in just a few firms: In 1982, about 70 percent was expended in 20 programs.

The U.S. supply of scientists and engineers has risen about 7 percent per year over the past decade and about 150,000 of these are employed in food-related jobs but this number declines every year. "The stark fact is that other sectors have lured these trained personnel to work on other matters," said Connor. Result: Greater borrowing of technology from other industries and from abroad.

Less than 10 percent of R&D results in new products, with the remainder devoted to new materials, applications, machinery and processes, Connor reported. This shows-up as improved productivity: Labor productivity in food processing has grown at a rate of about 3 percent per year since 1963, slightly higher than for all manufacturing. But this has required big increases in capital investment.

味

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